
Space Weather Forecast

Issued on Saturday, 27 April 2024 at 00:13 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Reducing risk of R, G and S-scale events during the four-day period.

Solar Activity: Solar activity was Low in the past 24 hours, with a modest Common-class flare observed at 26/0636 UTC from a sunspot region in the northwest. There are currently eight sunspot regions on the Earth-facing disc, one of which is unnumbered. The sunspot cluster in the southwest has now rotated just beyond the western limb. There are a few moderately sized sunspots on the Earth-facing disc, which are showing some minor developments, with one near the centre-disc and the other located in the northwest, which is approaching the western limb. A new and unnumbered region has emerged in the northeast. The remaining sunspot regions are all relatively small, simple and stable.

The cadence of observed Coronal Mass Ejections (CMEs) remains relatively high on coronagraphs, although those observed in the period were either high latitude limb features or else far-sided. A filament (arc of plasma) and a prominence eruption were observed lifting off the southeast limb at 26/1830 UTC which has produced a CME. This is currently under-going analysis for any potential Earth-directed component. Otherwise, no Earth-directed CMEs have been observed in coronagraph imagery in the past 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds have been at background, peaking at 387km/s at 26/0116 UTC, due to the weak arrival of a glancing CME (shortly after midnight), but despite this, solar winds have remained in a slow-regime throughout the period. The IMF, reached Moderate values, with the all-important north-south component, consistently positive (southward).

The net result of the above solar wind parameters started the period Quiet (Kp1-2), increasing to Unsettled to Active intervals (Kp3-4), with a period of G1/Minor Storm (Kp 5) observed between 26/1200-1800 UTC, due to the arrival of either a weak CME, or the Co-rotating Interaction Region (CIR) ahead of a coronal hole fast wind, although this is currently uncertain.

Energetic Particles / Solar Radiation: Solar radiation levels were very slightly above background levels (since 24/1400UTC) with the culprit most likely to be associated with southwestern quadrant Moderate-class flare activity.

Four-Day Space Weather Forecast Summary

Solar Activity: The X-ray forecast should see decreasing risks overall into the coming UTC weekend, as the cluster of southwestern regions more fully rotates off the Earth-facing side. Likely Moderate-class activity should fall to a chance during this time, with Strong-class showing a similar decrease within a daily slight chance.

Solar Wind / Geomagnetic Activity: There is now a reduced risk of further minor CME influence during the first half of the four-day period after the passage of a minor CME in the Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

current UTC day. Any CME may combine with an emerging fast wind into the coming UTC weekend to perhaps give a peak slight chance of Minor Geomagnetic Storm G1 as a result. From here, the chances of further such incidences should fall, with fast winds emanating from lower solar latitude 'coronal holes' perhaps glancing Earth in turn into the new UTC week. The result is that more reliably quiet geomagnetic conditions should develop later in the period.

Energetic Particles / Solar Radiation: Solar radiation is likely to remain at Background levels, but with a daily slight chance of reaching the S1/Minor Radiation Storm threshold, now judged to gradually reduce later in the four days with the continuing passage of the southwestern cluster of sunspot groups onto the far side.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	Yes	20	15	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	50	30	20	20
Very Active	R3 to R5 X	No	15	10	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	5	5	5
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm ⁻² sr ⁻¹ s ⁻¹)						